

## AUTHOR INDEX

- Alexander, J.** Colloid chemistry; principles and applications (book review), 159.
- Barnette, R. M.**, and Hester, J. B. Effect of burning upon the accumulation of organic matter in forest soils, 281-284.
- Batham, H. N.**, and Nigam, L. S. Periodicity of the nitrate content of soils, 181-190.
- Baver, L. D.** Relation of the amount and nature of exchangeable cations to the structure of a colloidal clay, 291-309.
- Blair, A. W. *See Prince, A. L.*
- Buckman, O. *See Lyon, T. L.*
- Büsgen, M.**, and Münch, F. The structure and life of forest trees (book review), 159.
- Bushnell, T. M.** The Purdue technique for taking and mounting monolithic soil profile samples, 395-399.
- Christensen, O.** An index of friability of soils, 119-135.
- Clark, N. A.**, and Collins, E. R. Equilibrium between soil and electrolytes, and its influence upon some lime requirement methods, 417-427.
- Clements, F. E. *See Weaver, J. E.*
- Coles, H. G.**, and Morison, C. G. T. Dehydration and soil acidity, 59-70.
- Collins, E. R. *See Clark, N. A.*
- Conrad, J. P.**, Proebsting, E. L., and McKinnon, L. R. Equipment and procedure for obtaining the displaced soil solution, 323-329.
- Degtjareff, W. Th.** Determining soil organic matter by means of hydrogen peroxide and chromic acid, 239-245.
- Doughty, J. L.** The fixation of phosphate by a peat soil, 23-35.
- Dreibelbis, F. R. *See Schollenberger, C. J.*
- Emerson, P.** Principles of soil technology (book review), 414-415.
- Flint, Fred W. *See Smith, A.*
- Fry, W. H. *See Hendricks, S. B.*
- Ghosh, J. C.**, and Bhattacharyya, P. B. Removal of ions from solutions of calcium dihydrogen phosphate by treatment with hydrous gels of alumina, silica, and their mixtures, 311-322.
- Greaves, J. D.** The microflora of leached alkali soils: II. A leached sodium-chloride soil, 79-83.
- Gericke, W. F.** Plant-food requirement of rice, 207-225.
- Hendricks, S. B.**, and Fry, W. H. The results of X-Ray and microscopical examinations of soil colloids, 457-479.
- Hester, J. B. *See Barnette, R. M.*
- Jenny, H.** The nitrogen content of the soil as related to the precipitation-evaporation ratio, 193-206.
- Kapp, L. C.** The approximate size of soil particles at which the heat of wetting is manifested, 401-412.
- Kappen, H.** Die Bodenazidität (book review), 160-161.
- Linford, L. B.** Soil moisture phenomena in a saturated atmosphere, 227-237.
- Löhnis, M. P.** Can *Bacterium radicola* assimilate nitrogen in the absence of the host plant, 37-57.
- Losina-Losinsky, L.**, and Martinov, P. F. A method of studying the activity and rate of diffusion of protozoa and bacteria in the soil, 349-362.
- Lutman, B. F.**, Microbiology (book review), 160.
- Lyon, T. L.**, and Buckman, H. O. The nature and property of soils. A college text of edaphology (book review), 413.
- MacIntire, W. H. *See Shaw, W. M.*
- MacIntire, W. H.**, and Sanders, K. B. The fixation of the potash of a green manure by liming materials, 109-117.
- McKaig, N., Jr.** A holder for soil sample bags, 191-192.
- McKinnon, L. R. *See Conrad, J. P.*, Proebsting, E. L., and.
- Martin, T. L.** The effect of alfalfa and sweet clover roots and tops on carbon dioxide evolution and accumulation of nitrates in the soil, 363-369.
- Martinov, P. F. *See Losina-Losinsky, L.*
- Metzger, W. H.** Replaceable bases of irrigated soil, 251-260.

- Morgan, M. F.** Factors affecting the estimation of lime requirement from pH values, 163-180.
- Morison, C. G. T.** *See* **Coles, H. G.**
- Münch, F.** *See* **Büsgen, M.**
- Nigam, L. S.** *See* **Batham, H. N.**
- Pierre, W. H.** Neutralizing values and rates of reaction with acid soils of different grades and kinds of liming materials, 137-158.
- Prince, A. L., and Blair, A. W.** Soil and crop studies with ammonium sulfate, 267-279.
- Proebsting, E. L.** *See* **Conrad, J. P., and McKinnon, L. R.**
- Richardson, L. A.** Properties of organic hardpan soils with special reference to their formation, 481-488.
- Sanders, K. G.** *See* **MacIntire, W. H.**
- Schollenberger, C. J.** Effect of leaking natural gas upon the soil, 261-266.
- Schollenberger, C. J., and Dreibelbis, F. R.** Effect of cropping with various fertilizer, manure, and lime treatments upon the exchangeable bases of plot soils, 371-394.
- Sessions, A. C.** Method for the determination of inorganic nitrogen in dried plant tissue, 285-289.
- Shaw, W. M., and MacIntire, W. H.** The nature of calcium hydroxide absorption by hydrated silica, 429-456.
- Simon, R. H.** The effect of phosphate and lime upon the rate curve of solubility of phosphorus from a Wooster silt loam soil, 71-78.
- Smith, A., and Flint, F. W.** Soil moisture determination by the alcohol method, 101-107.
- Waksman, S. A.** Impressions of certain soil conferences in Europe, during the summer of 1929, and some plans for the Second International Congress of Soil Science in 1930, 85-90.
- Weaver, J. E., and Clements, F. E.** Plant ecology (book review), 159-160.
- Wheeting, L. C.** A study of methods for the determination of the available potassium of soils, 1-21.
- Wiley, R. C.** Determination of calcium in the presence of iron and aluminum, 339-347.
- Wilson, B. D.** Exchangeable calcium and potassium in soils as affected by cropping and fertilization, 91-100; translocation of calcium in soils as measured by electro-dialysis and plant growth, 331-337.
- Wolfanger, L. A.** The major soil divisions of the United States. A pedologic-geographic survey (book review), 415-416.

## SUBJECT INDEX

- Absorption—**  
 equilibria between silica and calcium hydroxide, 440.  
 Freundlich, equation in silicon dioxide-calcium oxide absorption, 442.  
 ion effect on, 443.
- Alfalfa, effect on—**  
 carbon dioxide evolution in soil, 363.  
 nitrate accumulation, 363.
- Alkali soils, microflora of leached, 79–83.**
- Aluminum—**  
 "active" in soils treated with ammonium sulfate, 271.  
 calcium determination in presence of, 339.  
 gels—  
   method of preparing, 312.  
   removal of ions from calcium dihydrogen phosphate by, 311.  
 precipitation of, in hardpan, 485.
- Ammonia, exchangeable in soils, 383.**
- Bacteria—**  
 method of studying activity of soil, 349.  
 radicola—  
   diffusion of, in the soil, 352.  
   media for, 40, 47.  
   nitrogen assimilation by, 37–57.
- Base exchange, as affected by—**  
 cropping, 91, 371.  
 fertilization, 91, 371.  
 heating, 66.  
 horizon, 256.  
 lime, 371.  
 manure, 371.  
 soil moisture, 253.
- Bases—see also Cations, Calcium-exchangeable.**  
 replaceable, of irrigated soil, 251–260.
- Calcium—**  
 carbon dioxide effect on precipitation of, 344.  
 determination of, in presence of iron and aluminum, 339–347.  
 dihydrogen phosphate, removal of ions from with gels of aluminum, silicon dioxide, and their mixtures, 311–322.
- exchangeable—**  
 as affected by cropping and fertilization, 91.  
 fertilizer treatment, 96, 99.  
 method of determining in presence of carbonate, 94.
- exchangeable, relation to—**  
 cations, replaced by electro dialysis, 97.  
 colloid content, 98.  
 hydrogen-ion concentration, 95, 98.  
 limestone applied in soil, 95.  
 soil depth, 333.
- hydroxide, absorption of, by hydrated silica, 429–456.**
- translocation of, in soils as measured by electro dialysis and plant growth, 331–337.**
- Capillary—see also Soil moisture.**  
 rise of water in tubes of soil, 230.
- Carbon—**  
 dioxide—  
   effect on calcium precipitation, 344.  
   evolution of, as affected by alfalfa and clover, 363–369.  
 nitrogen ratio—  
   data, 204.  
   in hardpan soils, 485.
- Cations—see also Bases.**  
 exchangeable, relation to structure of colloidal clay, 291–309.
- Clay—**  
 colloidal, structure of as related to exchangeable cations, 291–309.  
 flocculation of colloidal, 296.  
 hydrogen-ion concentration of, containing various cations, 293.  
 migration velocity of colloidal, 294.  
 minerals, X-ray diffraction characteristics, 462.  
 particles, size of, formula for determining, 404.  
 specific conductivity of colloidal, 294.  
 viscosity of colloidal, 294.
- Clover, effect on carbon dioxide evolution and nitrate accumulation in the soil, 363–369.**

- Colloid chemistry: principles and application (book review), 159.
- Colloids—  
 chemical analyses of soil, 470.  
 clay, structure of as related to exchangeable cations, 291-309.  
 heat of wetting method for determining, 402, 408.  
 soil, X-ray and microscopic examination of, 457-479.  
 X-ray diffraction characteristics of soil, 464.
- Electrode, quinhydrone, 421.
- Electrodialysis, method of, 93.
- Fertilizers—  
 ammonium sulfate effect on—  
   aluminum solubility, 271.  
   crop yields, 151, 268.  
   hydrogen-ion concentration of soils, 152, 270.  
   nitrogen content of crops, 272.  
   soil types, 267.  
 effect on—  
   exchangeable bases, 371.  
   exchangeable calcium, 96.
- Forest trees, the structure and life (book review), 159.
- Gas, natural, effect of leaking on soil, 261-266.
- Gels—  
 alumina, removal of ions from calcium dihydrogen phosphate with, 311.  
 silica, removal of ions from calcium dihydrogen phosphate with, 311.
- Hardpan—*see* Soils hardpan.
- Heat—  
 effect on size of soil particles, 409.  
 of wetting in relation to size of soil particles, 401-412.
- Humidity factor maps of the U. S., 195.
- Hydrogen-ion concentration—*see also* Soils  
 hydrogen-ion concentration.  
 cations in clay as they affect the, 293.  
 quinhydrone electrode for determining, in soils, 421.
- Iron—  
 calcium determination in presence of, 339.  
 precipitation of, in hardpan, 485.  
 refracting materials in soil colloids as affected by, 458.
- Lime—  
 effect on—  
   exchangeable bases, 371.  
   hydrogen-ion concentration of soil, 143, 147.  
   phosphorus solubility in soils, 71.  
   potash fixation, 109-116.  
 materials, relative value of different, 140.  
 neutralizing value of different grades of, 137-157.  
 reaction rate with different grades of, 137.  
 requirement—  
   hydrogen-ion concentration and, 163.  
   Jones method for, a modification, 165.  
   methods, influence of electrolytes on, 417-427.  
   titration method to determine, 425.
- Magnesium, exchangeable, in soils, 381.
- Manganese, exchangeable, in soils, 380.
- Manure—  
 effect on exchangeable bases, 371.  
 green, fixation of potash from, by liming, 109.
- Microbiology (book review), 160.
- Microflora—*see also* Bacteria.  
 of leached alkali soils, 79-83.
- Neubauer—  
 modification of the, test, 9.  
 potassium availability tests by the method of, 4, 7.
- Nitrate—  
 accumulation of—  
   as affected by alfalfa and clover, 363.  
   during various seasons, 187.  
 content of soils, periodicity of the, 181-190.
- Organic—  
 hardpan soils, properties of, 481-488.  
 matter—  
   as affected by burning of forests, 281-289.  
   method of determining, 239-245.
- matter, relation to—  
 altitude, 194.  
 climate, 194.
- Peat—  
 acidity of, as affected by heating, 63.  
 soil, fixation of, phosphate by a, 23-35.
- Phosphate—  
 aluminum, solubility of, 29.  
 effect on solubility of phosphorus from a silt loam soil, 71.

- fixation, as affected by—
    - aluminum chloride, 28.
    - calcium chloride, 26.
    - ferric chloride, 27.
    - hydrogen-ion concentration, 25.
  - iron, solubility of, 29.
  - Phosphorus solubility of soil, as affected by phosphate and lime, 71-78.
  - Plant—
    - ecology (book review), 159.
    - food requirement of rice, 207-225.
    - growth, translocation of calcium in soils as measured by, 331.
    - tissue, inorganic nitrogen in dried, 285.
  - Potassium—
    - available—
      - citric acid extract as a measure of, 16.
      - method of determining, 1-21.
      - Neubauer method of determining, 17.
      - steam as an agent of extracting, 17.
    - exchangeable—
      - in soils, 13, 381.
      - formula for determining, 14.
    - exchangeable, as affected by—
      - cropping, 91-100.
      - fertilizers, 381.
    - extraction of, with different solvents, 10.
    - fixation of, from green manures by liming, 109-117.
    - leaching, 109-117.
    - method of determining, 5.
  - Precipitation-evaporation ratio, relation to nitrogen of soil, 193.
  - Precipitation-temperature quotient map of U. S., 195.
  - Protozoa, method of studying activity of soil, 349-362.
  - Rainfall, *see* Precipitation.
  - Rice—
    - effect on replaceable bases, 257.
    - plant-food requirements of, 207-225.
  - Silica—
    - gels—
      - heat effect on absorption capacity of, 433.
      - method of preparing, 312, 430.
      - removal of ions from calcium dihydrogen phosphate by, 311.
    - hydrated, calcium hydroxide absorption by, 429-456.
  - Silicates, formation of, in the presence of silicon dioxide and calcium oxide, 449.
  - Sodium, exchangeable, in soils, 383.
  - Soil—
    - acidity—*see also* Lime.
      - as affected by gas leakages, 261-266.
      - as affected by heating, 63.
    - Bodenazidität (book review), 160.
    - buffer action and, 424.
    - dehydration and, 59-70.
  - bacteria, *see* Bacteria.
  - bases, replaceable of irrigated, 251.
  - colloids, *see* Colloids.
  - composition of, and compressive strength, 126.
  - conferences in 1929, impressions, 85-90.
  - constants for strength-moisture curves, 128.
  - divisions of the United States (book review), 414.
  - electrolytes, equilibrium between, and, 417-427.
  - extract as media for *B. radicola*, 40, 51.
  - irrigated, replaceable bases of, 251-260.
  - lime, *see* Lime.
  - moisture—
    - capillary rise of, 230.
    - determination by the alcohol method, 101-107.
    - equivalent, relation to  $\text{CaCO}_3$  absorption factors, 176.
    - methods of determining, a comparison, 101-106.
    - phenomena in a saturated atmosphere, 227-237.
    - relation to compressive strength, 126.
  - moisture, effect on—
    - diffusion of protozoa and bacteria, 353.
    - replaceable bases, 253.
  - nitrogen, relation to precipitation—evaporation ratio, 193-206.
  - organic matter, *see* Organic matter.
  - particles, size of, at which heat of wetting is manifested, 401-412.
  - peat, *see* Peat.
  - phosphate fixation by a peat, 23-35.
  - protozoa, *see* Protozoa.
- profile—
  - monolith mounting, 395-399.
  - replaceable bases in, 256.
- relation to ammonium sulfate, 267-279.
- sample bags, a holder for, 191-192.
- science, Second International Congress, 85-90.

- solution—
  - equipment and procedure for obtaining the, 323-329.
  - specific resistance of, 327.
- structure, effect on diffusion of bacteria and protozoa, 359.
- Technology, principles of (book review), 414.
- water soluble substances of the, as affected by heating, 67.
- X-ray examination of, colloids, 457.
- Soils—
  - acid, neutralizing values of different grades of lime on, 137-157.
  - alkali, *see* Alkali.
  - bases, exchangeable as affected by treatment, 371.
  - buffer effect of, 269.
  - calcium—*see also* Calcium, Lime.
    - exchangeable in, as affected by cropping and fertilization, 91-100.
    - translocation in, 331.
  - electrodialysis of, 93, 331.
  - forest, as affected by burning, 281-289.
  - friability of, 119-135.
  - hardpan, organic in, 481-488.
  - hydrogen-ion concentration—*see also* Hydrogen-ion concentration.
    - lime requirement and, 163-180.
    - quinhydrone electrode to determine the, 421.
  - hydrogen-ion concentration, as affected by—
    - ammonium sulfate, 152.
    - heat, 68.
    - liming materials, 143, 147.
  - Nature and properties (book review), 413.
  - nitrate content of, periodicity of, 181-190.
  - potassium—
    - exchangeable in, as affected by cropping and fertilization, 91-100.
    - methods for the determination of available, 1-21.
    - types of (textural), and potassium availability, 10.
  - Water-soluble soil constituents as affected by heating, 67.
  - X-ray examination of soil colloids, 457.

